

(19) 日本国特許庁 (J P)

(12) 公開特許公報 (A)

(11) 特許出願公開番号

特開平11-135330

(43) 公開日 平成11年(1999) 5月21日

(51) Int.Cl. ⁸	識別記号	F I
H 0 1 F 17/06		H 0 1 F 17/06 A
19/00		19/00 C
37/00		37/00 F
		N

審査請求 未請求 請求項の数 4 F D (全 5 頁)

(21) 出願番号 特願平9-314570

(22) 出願日 平成9年(1997)10月31日

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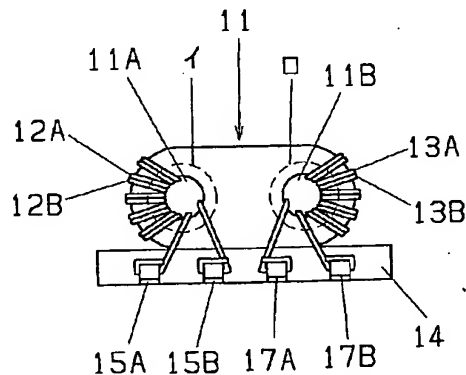
(54) 【発明の名称】 コモンモードチョークトランス

(57) 【要約】

【課題】 複数のチャンネルを有する電子機器に組み込んだ場合、トロイダルコアに巻線を巻回しているので、1チャンネル分しか形成できず、チャンネル分の個数を電子機器のプリント基板に実装する必要がある。従って、電子機器のプリント基板における占有面積が大きくなる。

【解決手段】 複数の貫通孔を有するメガネ型コア、複数の端子を有し、メガネ型コアが固定されるベースを備える。そして、メガネ型コアに対し、それぞれの貫通孔とメガネ型コアの外周で構成されるコアにそれぞれ2本の巻線をそれぞれ巻回して複数のトランスが形成される。この複数のトランスは、2本の巻線をそれぞれ入力端子と出力端子間に接続して1対の入力端子と1対の出力端子間に接続される。

【効果】 1つのメガネ型コアに複数のコモンモードチョークトランスを形成できるので、電子機器のプリント基板における占有面積を小さくできる。



【特許請求の範囲】

【請求項1】 複数の貫通孔を有するメガネ型コア、複数の端子を有し、該メガネ型コアが固定されるベースを備え、

該メガネ型コアに対し、それぞれの貫通孔とメガネ型コアの外周で構成されるコアにそれぞれ2本の巻線を巻回して複数のトランスが形成され、

該複数のトランスは、2本の巻線をそれぞれ入力端子と出力端子間に接続して1対の入力端子と1対の出力端子間にそれぞれ接続されることを特徴とするコモンモードチョークトランス。

【請求項2】 2つの貫通孔を有するメガネ型コア、複数の端子を有し、該メガネ型コアが固定されるベースを備え、

該メガネ型コアに対し、第1の貫通孔とメガネ型コアの外周で構成されるコアに2本の巻線を巻回して第1のトランスが形成され、第2の貫通孔とメガネ型コアの外周で構成されるコアに2本の巻線を巻回して第2のトランスが形成され、

該第1のトランスは、2本の巻線をそれぞれ入力端子と出力端子間に接続して第1の1対の入力端子と第1の1対の出力端子間に接続され、該第2のトランスは、2本の巻線をそれぞれ入力端子と出力端子間に接続して第2の1対の入力端子と第2の1対の出力端子間に接続されることを特徴とするコモンモードチョークトランス。

【請求項3】 1対の貫通孔を複数組有するメガネ型コア、複数の端子を有し、該メガネ型コアが固定されるベースを備え、

該メガネ型コアに対し、それぞれの1対の貫通孔間のコアにそれぞれ2本の巻線を巻回して複数のトランスが形成され、

該複数のトランスは、2本の巻線をそれぞれ入力端子と出力端子間に接続して1対の入力端子と1対の出力端子間にそれぞれ接続されることを特徴とするコモンモードチョークトランス。

【請求項4】 4つの貫通孔を有するメガネ型コア、複数の端子を有し、該メガネ型コアが固定されるベースを備え、

該メガネ型コアに対し、第1の貫通孔と第3の貫通孔間のコアに2本の巻線を巻回して第1のトランスが形成され、第2の貫通孔と第4の貫通孔間のコアに2本の巻線を巻回して第2のトランスが形成され、

該第1のトランスは、2本の巻線をそれぞれ入力端子と出力端子間に接続して第1の1対の入力端子と第1の1対の出力端子間に接続され、該第2のトランスは、2本の巻線をそれぞれ入力端子と出力端子間に接続して第2の1対の入力端子と第2の1対の出力端子間に接続されることを特徴とするコモンモードチョークトランス。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、2線上に大地に対して同電位で発生するコモンモードノイズを除去するコモンモードチョークトランスに関する。

【0002】

【従来の技術】図8は従来のコモンモードチョークトランス、図9は図8の回路図である。従来のコモンモードチョークトランスは、トロイダルコア81、トロイダルコア81に巻回される2本の巻線82A、82B、6本の端子を備えたベース84を備え、巻線82A、82Bが巻回されたトロイダルコア81がベース84に固着される。巻線82A、82Bのリードは、それぞれ所定の端子に接続される。そして、図9に示される様に第1の入力端子85Aと第1の出力端子86A間に巻線82Aが、第2の入力端子85Bと第2の出力端子86B間に巻線82Bがそれぞれ接続され、第1の入力端子85Aと第2の入力端子85Bからなる1対の入力端子と、第1の出力端子86Aと第2の出力端子86Bからなる1対の出力端子間にコモンモードチョークトランスが形成される。

【0003】

【発明が解決しようとする課題】この様なコモンモードチョークトランスが、例えば、LAN（ローカルエリアネットワーク）、コンピュータとコンピュータ間の通信、データ端末間の通信等におけるデジタル信号の伝送に用いられる受信用のインターフェイス回路と送信用のインターフェイス回路の2チャンネルを一体化したインターフェイスモジュールに実装される場合、それぞれのインターフェイス回路でコモンモードノイズを除去する必要があるため、受信用のインターフェイス回路と送信用のインターフェイス回路にそれぞれコモンモードチョークトランスが必要となる。しかし、前述のコモンモードチョークトランスは、トロイダルコア81に巻線を巻回して形成しているため、1チャンネル分しか形成できず、チャンネル分の個数をインターフェイスモジュールの基板にそれぞれ実装する必要がある。従って、従来のコモンモードチョークトランスは、インターフェイスモジュールの様な複数のチャンネルを有する電子機器のプリント基板上におけるコモンモードチョークトランスの占有面積が大きくなるという問題があった。本発明は、電子機器のプリント基板上における占有面積を小さくできるコモンモードチョークトランスを提供することを目的とする。

【0004】

【課題を解決するための手段】本発明のコモンモードチョークトランスは、複数の貫通孔を有するメガネ型コア、複数の端子を有し、メガネ型コアが固定されるベースを備え、このメガネ型コアに対し、それぞれの貫通孔とメガネ型コアの外周間の部分で構成されるコアにそれぞれ2本の巻線を巻回して複数のトランスが形成され、複数のトランスは、2本の巻線をそれぞれ入力端子と

力端子間に接続して1対の入力端子と1対の出力端子間にそれぞれ接続される。また、本発明のコモンモードチョークトランスは、1対の貫通孔を複数組有するメガネ型コア、複数の端子を有し、メガネ型コアが固定されるベースを備え、メガネ型コアに対し、それぞれの1対の貫通孔間の部分で構成されるコアにそれぞれ2本の巻線を巻回して複数のトランスが形成され、複数のトランスは、2本の巻線をそれぞれ入力端子と出力端子間に接続して1対の入力端子と1対の出力端子間にそれぞれ接続される。

【0005】

【発明の実施の形態】本発明のコモンモードチョークトランスは、2つの貫通孔を有するメガネ型コア、複数の端子を有し、メガネ型コアが固定されるベースを備える。このメガネ型コアには、第1の貫通孔とメガネ型コアの外周との間の部分に2本の巻線を巻回して第1のトランスが、第2の貫通孔とメガネ型コアの外周との間の部分に2本の巻線を巻回して第2のトランスがそれぞれ形成される。そして、第1のトランスが第1の1対の入力端子と第1の1対の出力端子間に、第2のトランスが第2の1対の入力端子と第2の1対の出力端子間にそれぞれ接続される。従って、本発明のコモンモードチョークトランスは、ベースに固定された1つのメガネ型コアに複数のトランスを形成できる。

【0006】

【実施例】以下、本発明のコモンモードチョークトランスの実施例を図1乃至図5を参照して説明する。図1は本発明のコモンモードチョークトランスの第1の実施例を示す側面図、図2は図1の上面図、図3は図1の回路図である。図1乃至図3において、11はメガネ型コア、12A、12B、13A、13Bは巻線、14はベースである。メガネ型コア11は、フェライトを用いて横断面が楕円の柱状に形成され、コアの軸方向に貫通する2つの貫通孔11A、11Bが設けられる。このメガネ型コア11の貫通孔11Aとメガネ型コア11の外周間に2本の巻線12A、12Bが巻回される。また、メガネ型コア11の貫通孔11Bとメガネ型コア11の外周間に2本の巻線13A、13Bが巻回される。4本の巻線が巻回されたメガネ型コア11は、ベース14に固定される。ベース14は、対向する側面にそれぞれ4本の金属板端子が設けられ、金属板端子の一端が面実装できる様に成形される。そして、巻線12Aが入力端子15Aと出力端子16A間に、巻線12Bが入力端子15Bと出力端子16B間にそれぞれ接続され、入力端子15A、15Bからなる1対の入力端子と出力端子16A、16Bからなる1対の出力端子間にトランスT1が形成される。また、巻線13Aが入力端子17Aと出力端子18A間に、巻線13Bが入力端子17Bと出力端子18B間にそれぞれ接続され、入力端子17A、17Bからなる1対の入力端子と出力端子18A、18Bからなる1対の出力端子間にトランスT2が形成される。

らなる1対の出力端子間にトランスT2が形成される。

このようなコモンモードチョークトランスは、メガネ型コア11に2つのトランスが形成されるが、貫通孔11Aとコア11の外周との間の部分に2本の巻線を巻回してトランスT1が形成され、貫通孔11Bとコア11の外周との間の部分に2本の巻線を巻回してトランスT2が形成されるので、トランスT1を構成するコイルによる磁束とトランスT2を構成する磁束が、図1に点線で示された(イ)、(ロ)の様にそれぞれの磁気抵抗の小さい最短距離で磁界が形成される。従って、トランスT1とトランスT2は、磁氣的に結合することがないので、互いに干渉することがない。このコモンモードチョークトランスを例えばインターフェイスモジュールに実装する場合、一方のトランスが受信用インターフェイス回路のコモンモードチョークトランスとして用いられ、他方のトランスが送信用インターフェイス回路のコモンモードチョークトランスとして用いられる。

【0007】図4は本発明のコモンモードチョークトランスの第2の実施例を示す側面図、図5は図4の上面図である。2つの貫通孔41A、41Bが設けられたフェライト製のメガネ型コア41は、貫通孔41Aとメガネ型コアの外周間に2本の巻線42A、42Bが束ねられた状態で巻回され、トランスT3が形成される。また、メガネ型コア41の貫通孔41Bとメガネ型コアの外周間に2本の巻線43A、43Bが束ねられた状態で巻回され、トランスT4が形成される。このメガネ型コア41は、複数の金属板端子が設けられたベース44に固定される。金属板端子は、ベース44の対向する側面にそれぞれ4本の金属板端子の一端を突出してリードからげ部を形成し、ベース44の別の対向する側面に他端を突出させて面接続部が形成される。そして、メガネ型コア41に巻かれた巻線のリードが金属板端子のリードからげ部に接続される。この時、トランスT3は、巻線42Aが入力端子45Aと出力端子46A間に、巻線42Bが入力端子45Bと出力端子46B間にそれぞれ接続される。また、トランスT4は、巻線43Aが入力端子47Aと出力端子48A間に、巻線43Bが入力端子47Bと出力端子48B間にそれぞれ接続される。

【0008】図6は本発明のコモンモードチョークトランスの第3の実施例を示す側面図、図7は図6の上面図である。複数の金属板端子が設けられたベース64に固着されるフェライト製のメガネ型コア61は、4つの貫通孔61A、61B、61C、61Dが設けられる。この貫通孔61A、61B間に2本の巻線62A、62Bが巻回されてトランスT5が形成される。また、貫通孔61C、61D間に2本の巻線63A、63Bが巻回されてトランスT6が形成される。そして、トランスT5は、巻線62Aが入力端子65Aと出力端子66A間に、巻線62Bが入力端子65Bと出力端子66B間に接続される。トランスT6は、巻線63Aが入力端子6

7Aと出力端子68A間に、巻線63Bが入力端子67Bと出力端子68B間に接続される。

【0009】以上、本発明のコモンモードチョークトランスの実施例を述べたが、これらの実施例に限られるものではない。例えば、メガネ型コアに巻回された巻線にタップが形成されてもよい。また、メガネ型コアに2個以上の貫通孔を設け、貫通孔とメガネ型コアの外周間に2本の巻線がそれぞれ巻回されてもよい。

【0010】

【発明の効果】本発明のコモンモードチョークトランスは、複数の端子を有するベースに固定される複数の貫通孔を有するメガネ型コアに対し、それぞれの貫通孔とメガネ型コアの外周で構成されるコアにそれぞれ2本の巻線を巻回したり、1対の貫通孔間のコアにそれぞれ2本の巻線を巻回したりして複数のトランスが形成され、複数のトランスが1対の入力端子と1対の出力端子間にそれぞれ接続されるので、1つのメガネ型コアにそれぞれ所定の機能を有するコモンモードチョークトランスを複数形成でき、しかもその複数のコモンモードチョークトランスが互いに干渉してそれぞれの特性を劣化させることがない。従って、本発明のコモンモードチョークトラ*

*ンスは、複数のチャンネルを有する電子機器に組み込む場合でも電子機器のプリント基板上における占有面積を小さくできると共に、部品点数を少なくできる。

【図面の簡単な説明】

【図1】 本発明のコモンモードチョークトランスの第1の実施例を示す側面図である。

【図2】 図1の上面図である。

【図3】 図1の回路図である。

【図4】 本発明のコモンモードチョークトランスの第2の実施例を示す側面図である。

【図5】 図4の上面図である。

【図6】 本発明のコモンモードチョークトランスの第3の実施例を示す側面図である。

【図7】 図6の上面図である。

【図8】 従来のコモンモードチョークトランスである。

【図9】 図8の回路図である。

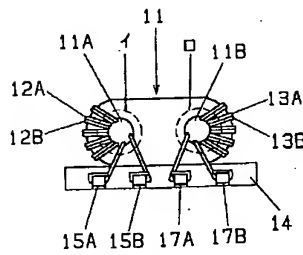
【符号の説明】

11 メガネ型コア

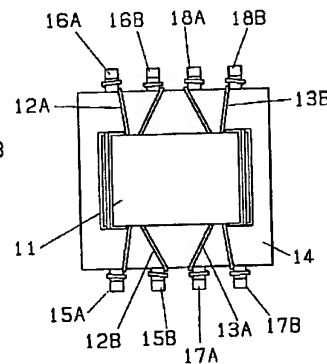
12A、12B、13A、13B 巻線

14 ベース

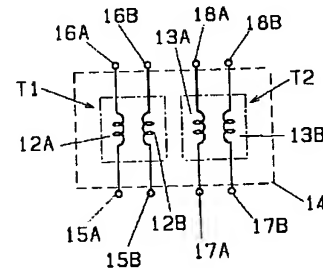
【図1】



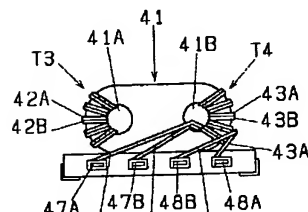
【図2】



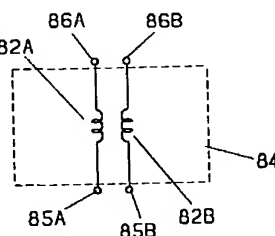
【図3】



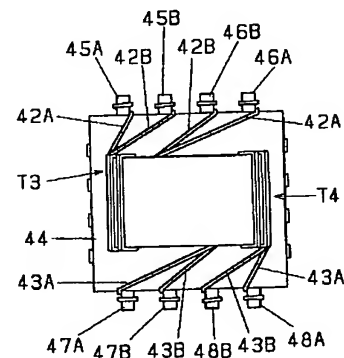
【図4】



【図9】



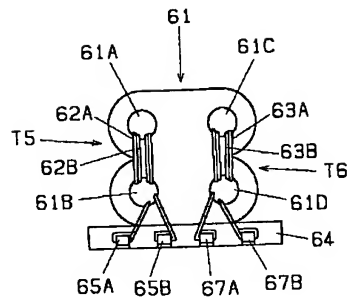
【図5】



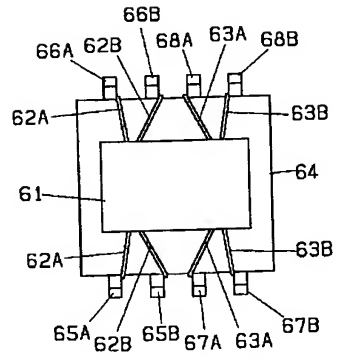
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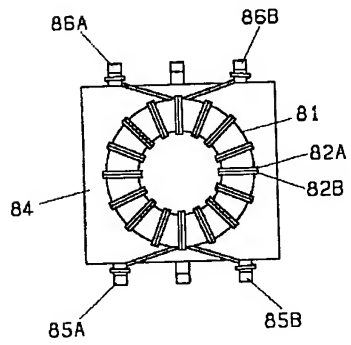
【図6】



【図7】



【図8】



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Bibliography

(19) [Publication country] Japan Patent Office (JP)
(12) [Kind of official gazette] Open patent official report (A)
(11) [Publication No.] JP, 11-135330, A
(43) [Date of Publication] May 21, Heisei 11 (1999)
(54) [Title of the Invention] Common mode choke transformer
(51) [International Patent Classification (6th Edition)]
H01F 17/06
19/00
37/00

[FI]

H01F 17/06 A

19/00 C

37/00 F

N

[Request for Examination] Un-asking.

[The number of claims] 4

[Mode of Application] FD

[Number of Pages] 5

(21) [Application number] Japanese Patent Application No. 9-314570

(22) [Filing date] October 31, Heisei 9 (1997)

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[Identification Number] 000003089

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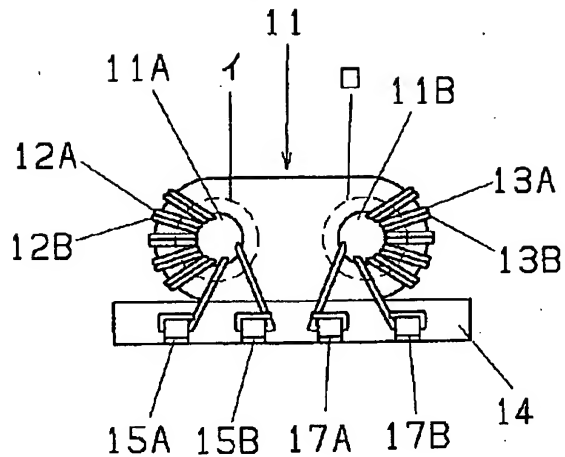
(57) [Abstract]

[Technical problem] Since the coil is wound around the toroidal core when it includes in the electronic equipment which has two or more channels, only one channel can be formed but it is necessary to mount the number for a channel in the printed circuit board of electronic equipment. Therefore, the occupancy area on the printed circuit board of electronic equipment becomes large.

[Means for Solution] It has the glasses mold core which has two or more through tubes, and two or more terminals, and has the base where a glasses mold core is fixed. And two coils are wound around the core which consists of peripheries of each through tube and a glasses mold core to a glasses mold core, respectively, and two or more transformers are formed. Two or more of these transformers connect two coils between an input terminal and an output terminal, respectively, and are connected among one pair of an input terminal and one pair of output terminals.

[Effect] Since two or more common mode choke transformers can be formed in one glasses mold core, occupancy area on the printed circuit board of electronic equipment can be made small.

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CLAIMS

[Claim(s)]

[Claim 1] Have the glasses mold core which has two or more through tubes, and two or more terminals, and it has the base where this glasses mold core is fixed. Two coils are wound around the core which consists of peripheries of each through tube and a glasses mold core to this glasses mold core, respectively, and two or more transformers are formed. These two or more transformers The

common mode choke transformer characterized by connecting two coils between an input terminal and an output terminal, respectively, and connecting, respectively among one pair of an input terminal and one pair of output terminals.

[Claim 2] Have the glasses mold core which has two through tubes, and two or more terminals, and it has the base where this glasses mold core is fixed. Wind two coils around the core which consists of peripheries of the 1st through tube and a glasses mold core to this glasses mold core, and the 1st transformer is formed. Two coils are wound around the core which consists of peripheries of the 2nd through tube and a glasses mold core, and the 2nd transformer is formed. This 1st transformer Two coils are connected between an input terminal and an output terminal, respectively, and it connects between one pair of 1st input terminals, and the 1st one pair of output terminals. This 2nd transformer The common mode choke transformer characterized by connecting two coils between an input terminal and an output terminal, respectively, and connecting between one pair of 2nd input terminals, and the 2nd one pair of output terminals.

[Claim 3] Have the glasses mold core which has one pair of through tubes [two or more sets of], and two or more terminals, and it has the base where this glasses mold core is fixed. To this glasses mold core, two coils are wound around the core between one pair of each through tubes, respectively, and two or more transformers are formed. These two or more transformers The common mode choke transformer characterized by connecting two coils between an input terminal and an output terminal, respectively, and connecting, respectively among one pair of an input terminal and one pair of output terminals.

[Claim 4] Have the glasses mold core which has four through tubes, and two or more terminals, and it has the base where this glasses mold core is fixed. To this glasses mold core, wind two coils around the core between the 1st through tube and the 3rd through tube, and the 1st transformer is formed. Two coils are wound around the core between the 2nd through tube and the 4th through tube, and the 2nd transformer is formed. This 1st transformer Two coils are connected between an input terminal and an output terminal, respectively, and it connects

between one pair of 1st input terminals, and the 1st one pair of output terminals.
This 2nd transformer The common mode choke transformer characterized by
connecting two coils between an input terminal and an output terminal,
respectively, and connecting between one pair of 2nd input terminals, and the
2nd one pair of output terminals.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the common mode choke transformer from which the common mode noise generated in this potential to the earth on 2 lines is removed.

[0002]

[Description of the Prior Art] The common mode choke transformer of the former [drawing 8] and drawing 9 are the circuit diagrams of drawing 8 . The conventional common mode choke transformer is equipped with the base 84 equipped with two coils 82A and 82B and six terminals which are wound around the toroidal core 81 and the toroidal core 81, and the toroidal core 68 around

which Coils 82A and 82B were wound fixes it at the base 84. The lead of Coils 82A and 82B is connected to a predetermined terminal, respectively. To the appearance shown in drawing 9, between 1st input terminal 85A and the 1st output terminal 86A and coil 82A One pair of input terminals which coil 82B is connected, respectively between 2nd input terminal 85B and the 2nd output terminal 86B, and consist of the 1st input terminal 85A and the 2nd input terminal 85B, A common mode choke transformer is formed among one pair of output terminals which consist of the 1st output terminal 86A and the 2nd output terminal 86B.

[0003]

[Problem(s) to be Solved by the Invention] Since it is necessary to remove common mode noise by each interface circuitry when such a common mode choke transformer is mounted in the interface module which made one two channels, the interface circuitry for reception used for transmission of the digital signal in the communication link between LAN (Local Area Network) and computers, the communication link between data terminals, etc., and the interface circuitry for transmission, for example, a common mode choke transformer is needed for the interface circuitry for reception, and the interface circuitry for transmission, respectively. However, since the above-mentioned common mode choke transformer winds and forms the coil in the toroidal core 81, it can form only one channel but needs to mount the number for a channel in the substrate of an interface module, respectively. Therefore, the conventional common mode choke transformer had the problem that the occupancy area of the common mode choke transformer on the printed circuit board of the electronic equipment which has two or more channels like an interface module became large. This invention aims at offering the common mode choke transformer which can make small occupancy area on the printed circuit board of electronic equipment.

[0004]

[Means for Solving the Problem] The glasses mold core to which the common

mode choke transformer of this invention has two or more through tubes, Have two or more terminals, have the base where a glasses mold core is fixed, and this glasses mold core is received. Two coils are wound around the core which consists of parts between the peripheries of each through tube and a glasses mold core, respectively, two or more transformers are formed, and two or more transformers connect two coils between an input terminal and an output terminal, respectively, and are connected, respectively among one pair of an input terminal and one pair of output terminals. Moreover, the common mode choke transformer of this invention Have the glasses mold core which has one pair of through tubes [two or more sets of], and two or more terminals, and it has the base where a glasses mold core is fixed. Two coils are wound around the core which consists of parts between one pair of each through tubes to a glasses mold core, respectively, and two or more transformers are formed. Two or more transformers Two coils are connected between an input terminal and an output terminal, respectively, and it connects, respectively among one pair of an input terminal and one pair of output terminals.

[0005]

[Embodiment of the Invention] The common mode choke transformer of this invention has the glasses mold core which has two through tubes, and two or more terminals, and is equipped with the base where a glasses mold core is fixed. Two coils are wound around the part between the 1st through tube and the periphery of a glasses mold core, the 1st transformer winds two coils around the part between the 2nd through tube and the periphery of a glasses mold core, and the 2nd transformer is formed in this glasses mold core, respectively. And the 1st transformer is connected between one pair of 1st input terminals, and the 1st one pair of output terminals, and the 2nd transformer is connected, respectively between one pair of 2nd input terminals, and the 2nd one pair of output terminals. Therefore, the common mode choke transformer of this invention can form two or more transformers in one glasses mold core fixed to the base.

[0006]

[Example] Hereafter, the example of the common mode choke transformer of this invention is explained with reference to drawing 1 thru/or drawing 5 . The plan of drawing 1 and drawing 3 of the side elevation in which drawing 1 shows the 1st example of the common mode choke transformer of this invention, and drawing 2 are the circuit diagrams of drawing 1 . As for a glasses mold core, and 12A, 12B, 13A and 13B, in drawing 1 thru/or drawing 3 , 11 is [a coil and 14] the bases. Two through tubes 11A and 11B which the cross section is formed in the shape of [of an ellipse] a column using a ferrite, and penetrate the glasses mold core 11 to the shaft orientations of a core are formed. Two coils 12A and 12B are wound between through tube 11A of this glasses mold core 11, and the periphery of the glasses mold core 11. Moreover, two coils 13A and 13B are wound between through tube 11B of the glasses mold core 11, and the periphery of the glasses mold core 11. The glasses mold core 11 around which four coils were wound is fixed to the base 14. Four metal plate edge children are prepared in the side face which counters, respectively, and the base 14 is fabricated so that the surface mounting of a metal plate edge child's end can be carried out. And coil 12A is connected between input terminal 15A and output terminal 16A, coil 12B is connected between input terminal 15B and output terminal 16B, respectively, and a transformer T1 is formed among one pair of output terminals which consist of one pair of input terminals which consist of input terminals 15A and 15B, and output terminals 16A and 16B. Moreover, coil 13A is connected between input terminal 17A and output terminal 18A, coil 13B is connected between input terminal 17B and output terminal 18B, respectively, and a transformer T2 is formed among one pair of output terminals which consist of one pair of input terminals which consist of input terminals 17A and 17B, and output terminals 18A and 18B. Although two transformers are formed in the glasses mold core 11, such a common mode choke transformer Since two coils are wound around the part between through tube 11A and the periphery of a core 11, a transformer T1 is formed, two coils are wound around the part between through tube 11B and the periphery of a corê 11 and a transformer T2 is formed A field is formed by the

small minimum distance of each magnetic reluctance like (b) magnetic flux with the coil which constitutes a transformer T1, and the magnetic flux which constitutes a transformer T2 were indicated to be to drawing 1 by the dotted line, and (b). Therefore, since it does not join together magnetically, it does not interfere in a transformer T1 and a transformer T2 mutually. When it mounts this common mode choke transformer in an interface module, one transformer is used as a common mode choke transformer of the interface circuitry for reception, and the transformer of another side is used as a common mode choke transformer of the interface circuitry for transmission.

[0007] The side elevation in which drawing 4 shows the 2nd example of the common mode choke transformer of this invention, and drawing 5 are the plans of drawing 4. It is wound where, as for the glasses mold core 41 made from a ferrite in which two through tubes 41A and 41B were formed, two coils 42A and 42B are bundled between the peripheries of through tube 41A and a glasses mold core, and transformer T3 is formed. Moreover, between through tube 41B of the glasses mold core 41, and the periphery of a glasses mold core, it is wound where two coils 43A and 43B are bundled, and transformer T four is formed. This glasses mold core 41 is fixed to the base 44 in which two or more metal plate edge children were prepared. A metal plate edge child projects four metal plate edge children's end on the side face in which the base 44 counters, respectively, forms **** from a lead, makes the other end project on another side face of the base 44 which counters, and a field connection is formed. And the lead of the coil coiled around the glasses mold core 41 is connected to **** from a metal plate edge child's lead. At this time, coil 42A is connected between input terminal 45A and output terminal 46A, and, as for transformer T3, coil 42B is connected between input terminal 45B and output terminal 46B, respectively. Moreover, coil 43A is connected between input terminal 47A and output terminal 48A, and, as for transformer T four, coil 43A is connected between input terminal 47B and output terminal 48B, respectively.

[0008] The side elevation in which drawing 6 shows the 3rd example of the

common mode choke transformer of this invention, and drawing 7 are the plans of drawing 6 . As for the glasses mold core 61 made from a ferrite which fixes at the base 64 in which two or more metal plate edge children were prepared, four through tubes 61A, 61B, 61C, and 61D are formed. Between this through tube 61A and 61B, two coils 62A and 62B are wound, and a transformer T5 is formed. Moreover, between through tube 61C and 61D, two coils 63A and 63B are wound, and a transformer T6 is formed. And coil 62A is connected between input terminal 65A and output terminal 66A, and, as for a transformer T5, coil 62B is connected between input terminal 65B and output terminal 66B. Coil 63A is connected between input terminal 67A and output terminal 68A, and, as for a transformer T6, coil 63B is connected between input terminal 67B and output terminal 68B.

[0009] As mentioned above, although the example of the common mode choke transformer of this invention was described, it is not restricted to these examples. For example, a tap may be formed in the coil wound around the glasses mold core. Moreover, two or more through tubes are prepared in a glasses mold core, and two coils may be wound between the peripheries of a through tube and a glasses mold core, respectively.

[0010]

[Effect of the Invention] As opposed to the glasses mold core which has two or more through tubes by which the common mode choke transformer of this invention is fixed to the base which has two or more terminals Wind two coils around the core which consists of peripheries of each through tube and a glasses mold core, respectively, or Since two coils are wound around the core between one pair of through tubes, respectively, two or more transformers are formed and two or more transformers are connected, respectively among one pair of an input terminal and one pair of output terminals Two or more common mode choke transformers which have a predetermined function to one glasses mold core, respectively can be formed, moreover two or more of the common mode choke transformers interfere mutually, and each property is not degraded. Therefore,

the common mode choke transformer of this invention can lessen components mark while being able to make small occupancy area on the printed circuit board of electronic equipment, even when including in the electronic equipment which has two or more channels.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the side elevation showing the 1st example of the common mode choke transformer of this invention.

[Drawing 2] It is the plan of drawing 1 .

[Drawing 3] It is the circuit diagram of drawing 1 .

[Drawing 4] It is the side elevation showing the 2nd example of the common mode choke transformer of this invention.

[Drawing 5] It is the plan of drawing 4 .

[Drawing 6] It is the side elevation showing the 3rd example of the common mode choke transformer of this invention.

[Drawing 7] It is the plan of drawing 6 .

[Drawing 8] It is the conventional common mode choke transformer.

[Drawing 9] It is the circuit diagram of drawing 8 .

[Description of Notations]

11 Glasses Mold Core

12A, 12B, 13A, 13B Coil

14 Base

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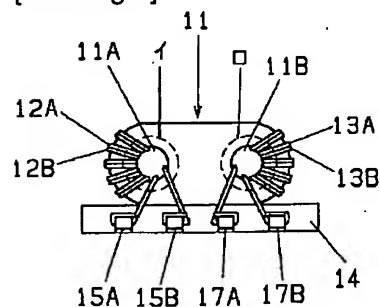
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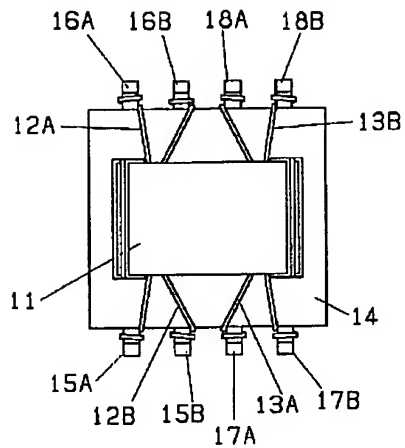
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DRAWINGS

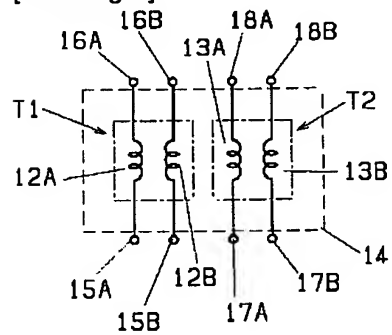
[Drawing 1]



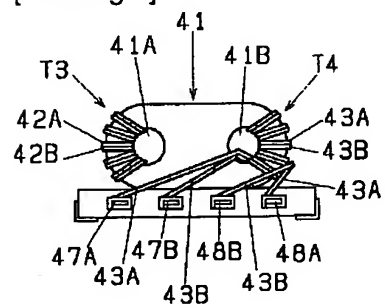
[Drawing 2]



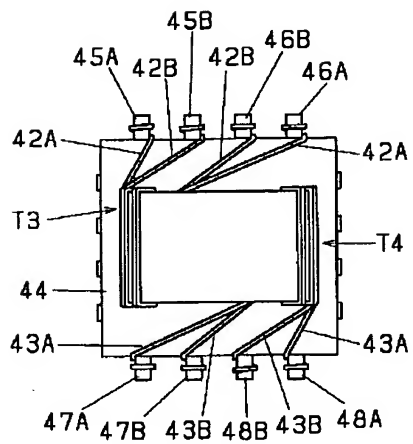
[Drawing 3]



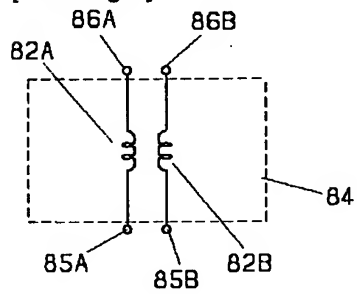
[Drawing 4]



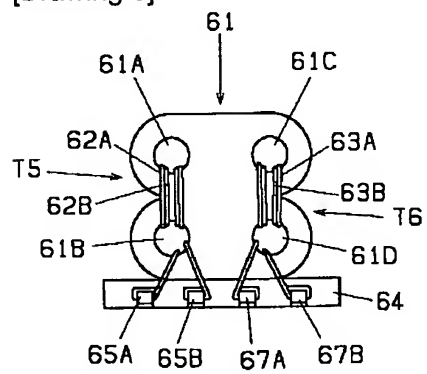
[Drawing 5]



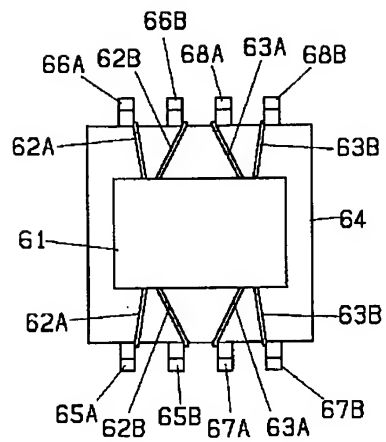
[Drawing 9]



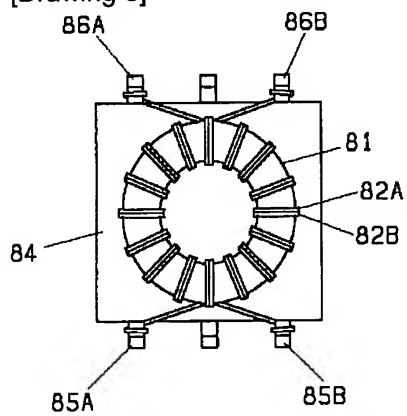
[Drawing 6]



[Drawing 7]



[Drawing 8]



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